

CLAIMS

1. A water-impermeable flexible polyurethane foam obtained by reacting a polyol component, which comprises at least one hydrophobic polyol, with at least 5 one polyisocyanate component in the presence of a foaming agent, characterized in that it has a compression force of less than or equal to 12 kPa for 50% compression and in that the molar ratio of the isocyanate functional groups to the total of the alcohol functional groups and reactive functional groups (the index) is less than 0.90.
- 10 2. The polyurethane foam as claimed in claim 1, characterized by a compression force of around 8 to 12 kPa for 50% compression.
3. The polyurethane foam as claimed in claim 1 or 2, characterized in that it has a density not exceeding 150 kg/m<sup>3</sup>, preferably not exceeding 60 kg/m<sup>3</sup>.
- 15 4. The polyurethane foam as claimed in any one of the preceding claims, characterized in that at least one component from the polyol component and the polyisocyanate component has a functionality strictly greater than 2, especially at least 2.1.
5. The polyurethane foam as claimed in any one of the preceding claims, characterized in that the isocyanate index is less than or equal to 0.85, especially 20 around 0.70 to 0.85.
6. The polyurethane foam as claimed in any one of the preceding claims, characterized in that the polyol component reacts with the polyisocyanate component in the presence of a monofunctional alcohol or amine component.
- 25 7. The polyurethane foam as claimed in any one of the preceding claims, characterized in that the hydrophobic polyol has a fatty hydrocarbon chain.
8. The polyurethane foam as claimed in claim 7, characterized in that the hydrophobic polyol is derived from a fatty acid dimer, especially one resulting from the double esterification of a fatty acid dimer by a polyol.
- 30 9. The polyurethane foam as claimed in any one of the preceding claims, characterized in that the polyisocyanate component comprises predominantly 4,4'-methylene-bis(phenylisocyanate)(4,4'MDI).
10. The polyurethane foam as claimed in claim 9, characterized in that the polyisocyanate component contains at least 30 mol% of the 2,4'MDI isomer.
- 35 11. The polyurethane foam as claimed in any one of the preceding claims, characterized in that the foaming agent comprises water.
12. The polyurethane foam as claimed in any one of the preceding claims, characterized in that it is obtained in the presence of at least one additive, especially a surfactant, having at least one reactive functional group that reacts with the polyisocyanate compound or with the polyol compound.

13. A process for manufacturing a polyurethane foam as claimed in any one of the preceding claims, characterized in that it comprises the following steps:

a reaction mixture comprising the polyol component, the polyisocyanate component and the foaming agent is prepared;

5 - the reaction mixture is cast on a conveyor belt; and

the conveyor belt and the cast mixture are made to run through a crosslinking oven.14. The process as claimed in claim 13, characterized in that an upper protective film is deposited on the cast mixture, and the conveyor belt and the cast mixture coated with the upper protective film are made to run through a crosslinking oven.

10 15. The process as claimed in claim 13 or 14, characterized in that a lower protective film is placed beforehand on the conveyor belt.

16. The process as claimed in claim 14 or 15, characterized in that the lower protective film or the upper protective film is provided with an adhesive on its 15 face in contact with the reaction mixture.

17. The process as claimed in one of claims 14 to 16, characterized in that the lower protective film and/or the upper protective film are removed and another film provided with an adhesive is attached to a free face of the foam strip.

18. A process for manufacturing a polyurethane foam as claimed in any one 20 of claims 1 to 12, characterized in that it comprises the following steps:

- a reaction mixture comprising the polyol component, the polyisocyanate component and the foaming agent is prepared;

- the reaction mixture is injected or cast in a closed or open mold; and

- the mixture is crosslinked in the mold.

25 19. The use of the polyurethane foam as claimed in any one of claims 1 to 12 as a water-impermeable seal.